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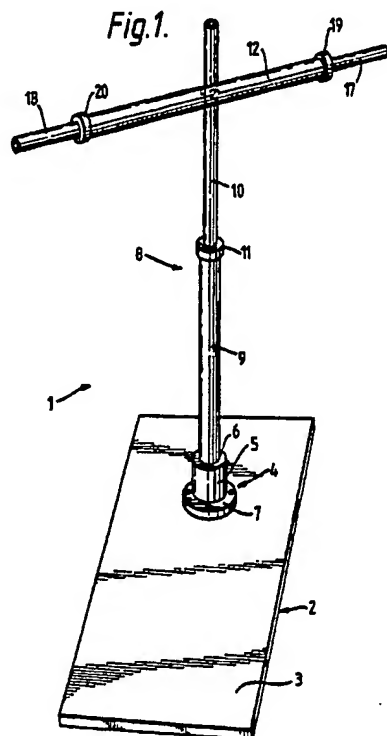
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(58) Field of Search

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(54) An exercise apparatus

(57) An exercise apparatus for physically exercising parts of the body comprises an elongate component 12 which is mounted upon a support 11 for rotation in a vertical plane. The apparatus is designed so that a user may rest a foot or leg on one end of the rotatable component 18 whilst holding the other end of the component 17 and can then manually rotate the component in order to assist in raising and lowering the leg or foot which is resting upon the component. The support can be telescopically adjustable and can be mounted in a socket on on a baseboard. It is envisaged that the apparatus will be of particular benefit to those persons who practice martial arts.



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Fig.1.

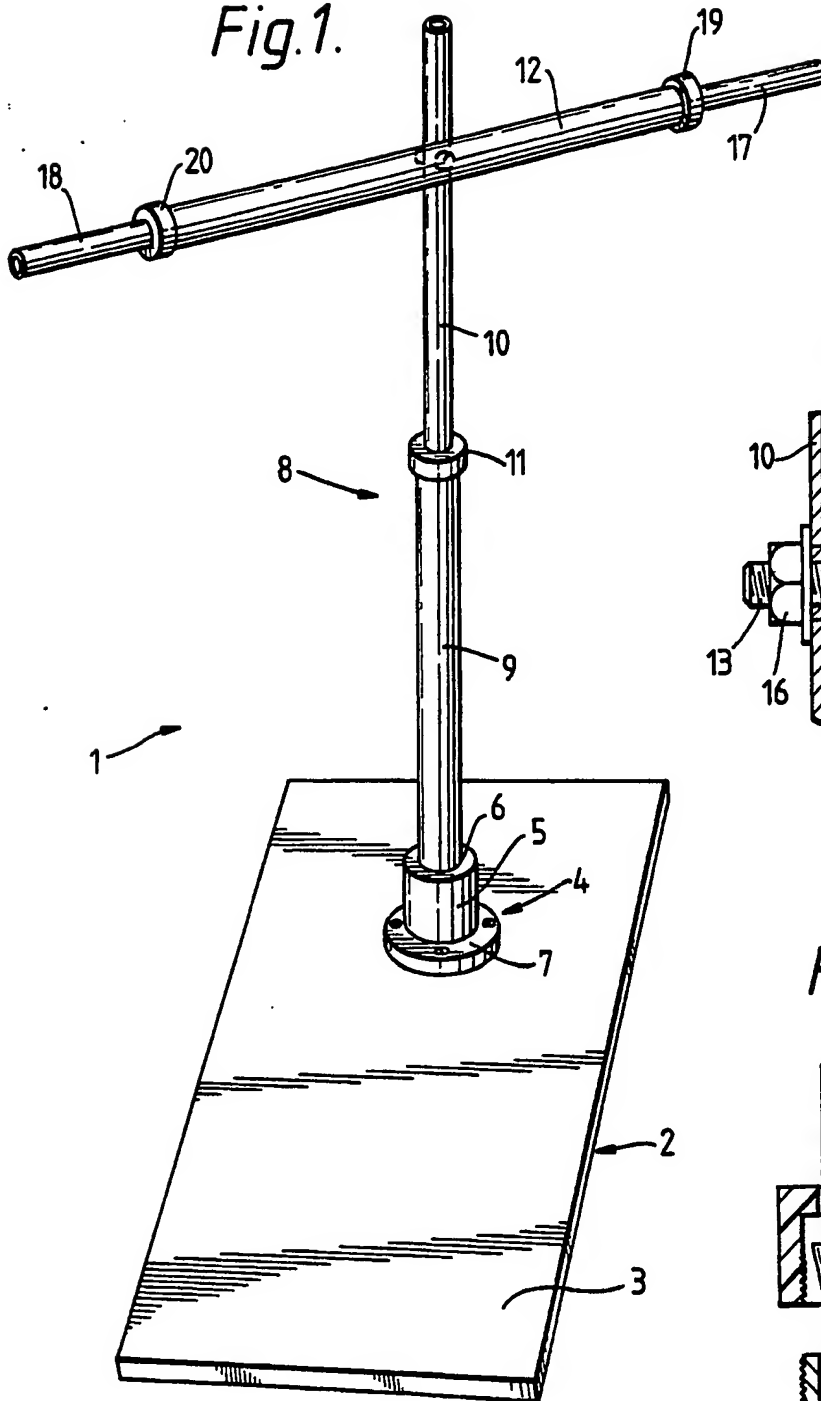


Fig.2.

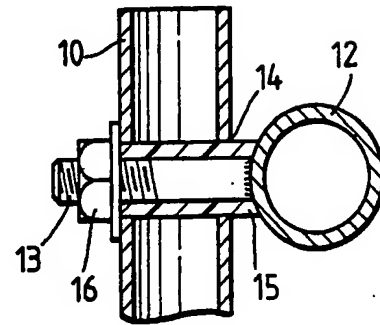
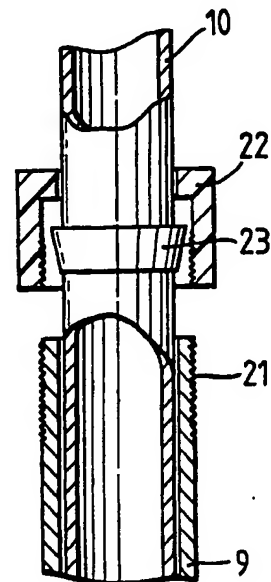


Fig.3.



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Title: AN EXERCISE APPARATUS

The present invention relates to an exercise apparatus for physically exercising parts of the body and more particularly to an apparatus designed for stretching muscles, ligaments, tendons and the like. The apparatus is specifically intended for use by, and is especially beneficial to, people who practice martial arts, but is not limited to use by such people and can be used as a general exercise apparatus by anyone.

The martial arts involve high kicking and simultaneous extension of the legs, often accompanied by twisting of the torso. This not only requires muscle strength and suppleness but also a very good sense of balance. At present there is no single physical exercise apparatus which allows a person to train and enhance these various skills. It is well-known to exercise the legs and to try and improve simultaneous kicking height and leg extension by placing one foot in a loop formed at one end of a length of rope which passes over a pulley fixed overhead and by pulling on the other end of the rope in order to raise the leg whilst it is extended. However, if this form of exercise is not undertaken carefully and gradually, it can easily result in physical injury due to over-stretching. Gymnasium equipment is also available which can be operated to "stretch" the legs by physically forcing them apart. When using this equipment, however, the operator is usually seated upon the equipment and does not have to worry about his sense of balance. These types of equipment only serve to exercise a limited range of muscles.

Thus, neither of the prior proposals discussed above serve as a particularly useful exercise apparatus for people practising the martial arts.

The present invention seeks to provide an improved exercise apparatus which addresses the problems discussed above.

According to the present invention there is provided an exercise apparatus for physically exercising parts of the body, said apparatus comprising an elongate component and a support upon which the component is mounted for rotation in a vertical plane, the apparatus having means for mounting the support in position, the apparatus being designed to enable a user to rest a leg or foot on one end of the rotatable elongate component whilst holding the other end of the component and then to manually rotate the component in order to assist in raising the leg or foot which is resting upon the rotatable component.

Preferably the overall length of the rotatable elongate component is telescopically adjustable.

In one embodiment the support comprises a tube and the mounting means comprise a clamp connected thereto which enables the apparatus to be clamped onto an item of gymnasium equipment.

In another embodiment the support comprises a tube and the mounting means comprise a further tube to which the support tube is telescopically connected, one end of the further tube being designed to be received within a socket which holds the support tube and the further tube substantially vertically, the telescopic connection between

the support tube and the further tube permitting adjustment of the height of the apparatus.

With this arrangement it is preferable that the telescopic connection between the support tube and the further tube automatically collapses if a force in excess of a predetermined limit is exerted on the support tube in an axial direction towards the further tube.

Conveniently the telescopic connection incorporates a wedge-sectioned ring which surrounds the smaller of the support tube and the further tube and a collar which also surrounds the smaller of the support tube and the further tube and which is provided with internal threading to engage corresponding external threading provided on the exterior of the larger of the support tube and the further tube, the arrangement being such that when the collar is tightened onto the threaded tube, at least part of the wedge-sectioned ring is forced into a clearance between the support tube and the further tube and will normally serve to hold the tubes in position relative to one another.

Advantageously the apparatus includes a substantially planar platform or base having an upper surface upon which a socket is mounted, the socket being dimensioned snugly to receive the lower end of the further tube to which the support tube is telescopically connected, the user of the apparatus standing upon the platform when using the apparatus.

Preferably the rotatable elongate component is capable of rotating through 360°.

Conveniently the rotatable elongate component is effectively supported in a cantilever fashion on one end of a component forming part of the apparatus.

In order that the present invention may be more readily understood and so that further features thereof can be appreciated, the invention will now be described by way of example with reference to the accompanying drawings in which:

FIGURE 1 is a schematic perspective view of an exercise apparatus in accordance with the present invention;

FIGURE 2 is a part cross-sectional view showing the way in which one component of the apparatus is rotatably mounted upon another component thereof; and

FIGURE 3 is a part cross-sectional view showing a telescopic joint between two parts of the apparatus.

Referring to Figure 1 of the drawings, an exercise apparatus 1 comprises a planar base or platform 2 having an upper surface 3 upon which a supporting socket 4 is mounted. The base or platform 2 is designed to stand on level ground. The socket 4 has a cylindrical upstanding portion 5 defining a central, vertically extending bore 6 which receives a further part of the apparatus. The lower end of the cylindrical portion 5 is formed with a flange 7 by way of which the socket is securely mounted upon the base 2. In the preferred arrangement the base 2 is generally rectangular and the socket 4 is mounted on the base at a position centrally between the opposed longer sides of the base and relatively close to one of the shorter sides of the base, so that the major part of the

upper surface 3 forms a platform upon which a person may stand when using the apparatus. The base or platform 2 may be formed of wood. The socket 4 may be formed of metal.

The socket 4 receives the lower end of a vertically upstanding telescopically extendable tubular support 8 having a lower tube 9 within which an upper tube 10 is telescopically received. The upper tube 10 is slidably adjustable within the lower tube 9 and may be locked in any desired position relative thereto by way of a locking telescopic connection 11 which will be described in more detail hereinafter. It is envisaged that both the lower tube 9 and the upper tube 10 will be formed of metal with the external diameter of the lower tube 9 being selected so that the lower end of the tube is a snug fit within the bore 6 defined by the cylindrical portion 5 of the socket 4.

A further tube 12 is rotatably mounted upon the upper tube 10 at a position relatively close to the upper end thereof. The tube 12 is mounted on the tube 10 for rotation in a vertical plane.

Figure 2 illustrates the way in which the tube 12 is rotatably mounted on the tube 10. A threaded boss 13 is welded onto the tube 12 so as to extend radially therefrom. The tube 10 defines a diametrically extending bore 14 within which a sleeve 15 formed of a material which offers little frictional resistance, such as polytetrafluoroethylene is received. The sleeve 15 has an overall length which is slightly greater than the diameter of the tube 10 and thus projects radially outwardly from the tube by a small extent. The bolt 13 is dimensioned so as to pass snugly through the sleeve 15 and the tube 12 is held in position by securing a washer and nut 16 on the free end of

the bolt 13. The tube 12 is effectively supported in a cantilever fashion on the end of the bolt 13 within the sleeve 15. Of course, other types of rotational connection could be provided in order to mount the tube 12 on the tube 10. The tube 12 is capable of rotating through 360° in a vertical plane when in use.

The free ends of the tube 12 each telescopically receive a further tube 17,18 which may be slidably adjusted within the tube 12 and locked at any desired position by way of respective telescopic locking connections 19,20 which are of the same type as the connection 11. This locking connection is illustrated in more detail in Figure 3 of the drawings, which identifies the connection 11 between the tubes 9,10 but is identical to the connections 19,20.

As can be seen from Figure 3, the external surface of the larger tube is threaded over a short length at its free end, as identified by the reference numeral 21 and is designed to receive an internally threaded collar 22 with a nylon ring 23 located between the collar 22 and the free end of the larger tube 9. The collar 22 is in the form of a cap having a central bore through which the tube 10 passes. Similarly the nylon ring 23 defines a bore through which the tube 10 passes. In fact the nylon ring 23 is designed to be a snug fit around the outer surface of the tube 10. In cross-section the ring 23 is wedge-shaped. The ring 23 is mounted over the end of the smaller tube 10 so that its smaller diameter is directed towards the free end of the tube 10. In order to assemble the telescopic connections 11,19,20 the collar 22 is initially located over the smaller tube and the nylon ring 23 is then also located over the smaller tube in the arrangement as shown in Figure 3. The collar is designed so that the ring 23

will not pass through its central opening. The smaller tube can then be inserted into the larger tube and the collar 22 is moved along the smaller tube until its internal threading engages the external threading on the larger tube, whereupon the collar is tightened and causes the nylon ring 23 to be forced into the small clearance gap between the two tubes, thereby locking the two tubes in position relative to each other. If the collar is loosened slightly, then the smaller tube may be moved axially relative to the larger tube to any desired position and can simply be locked in any desired position by again tightening the collar 22.

It will be appreciated that the telescopic connection 11 enables the overall height of the exercise apparatus to be adjusted to a desired height, whilst the telescopic connections 19,20 enable the overall length of the rotatable tube 12 to be adjusted to a desired length.

When the apparatus is not in use the tubes 17,18 can be retracted within the tube 12 and the tube 10 can be retracted within the tube 9 which is itself removable from the socket 4. This results in an apparatus which is very compact and which may, for example, be stored under a bed or in other places where space is limited. The "collapsible" nature of the apparatus means that it can readily be transported.

When it is desired to use the apparatus the base or platform 2 is positioned on level ground and the lower end of the tube 9 is inserted into the socket 4 so that it is supported vertically. The overall height of the apparatus is adjusted by way of the connection 11 so that the centre of the tube 12 is positioned slightly above waist height. The tubes 17,18 are then extended so that when the person

using the apparatus stands on the platform 2 facing the tubular apparatus, he can place a foot on the tube 17 or 18 with his leg fully extended. This is, of course, only undertaken when the relevant tube 17 or 18 has been lowered towards the ground by rotating the tube 12.

When the apparatus has been set up in the manner described above, it may be used by a person who practices the martial arts in order to exercise a wide range of muscles which are used when performing kicks and when twisting the torso. The apparatus also helps the person to develop a sense of balance, as will become apparent from the following description.

The user of the apparatus will stand on the platform 2 facing the upstanding part of the apparatus and will lower one end of the rotatable tube 12 so that one foot can be placed on the lowered end of the tube whilst the raised end of the tube can be held in the users hands. The leg or foot which is placed upon the tube can then be raised and extended whilst still holding onto the other end of the tube and possibly exerting very light pressure on that end of the tube in order to assist raising of the leg. However, it is to be noted that if excessive downward force is exerted on the tube, then the connection 11 will collapse on itself and the tube 10 will drop inside the tube 9. Thus the apparatus serves to prevent a user from pushing too hard on the raised end of the tube 12 in an attempt to raise the leg which is supported on the other end of the tube but encourages the user to use their own sense of balance, i.e. to use their own body muscles to raise the leg and foot which is supported on one end of the tube 12 without exerting undue downward force on the tube.

In addition, the connection 11 between the tubes 9 and 10, permits the upper tube 10 to rotate about its central vertical axis and this permits the user to twist the torso and the leg which is supported upon the tube 12 in the same way as is often done when performing a kick in a martial arts contest. It is to be appreciated that the user may exercise a very wide range of muscles on the apparatus by positioning his foot or let on the tube 12 in different ways. For example, the foot and back of the leg may initially be supported on the tube 12 and the leg can then effectively be rotated so that the front of the leg is supported on the tube 12 in order to exercise a different range of muscles.

Clearly many different forms of exercise can be devised and performed using the apparatus of this invention. As mentioned above, although the apparatus will be of particular benefit to users who practice the martial arts, it can of course be used by anyone as a general exercise apparatus, particularly for exercising the legs.

It should be appreciated that various modifications may be made to the embodiment which has been described and illustrated without departing from the scope of this invention. Thus, whilst in the illustrated arrangement the lower end of the tube 9 is removably supported within a socket 4, the lower end of the tube could be hingedly connected to the platform 2 so that it may be moved between a lowered position in which it lies immediately on top of the platform 2 and a raised position where it would be locked and where it stands vertically. Where the apparatus does not need to be portable, the lower end of the tube 9 could, of course, be permanently fixed in the ground. As a further alternative arrangement it is envisaged that the platform 2 and the lower tube 9 could be omitted and the

upper tube 10 may carry a clamping device which enables it to be clamped to an existing item of gym equipment. However, with this arrangement one would not have the benefit of the "collapsing" nature of the connection 11, which prevents the user from exerting undue downward force on the tube 12.

CLAIMS:

1. An exercise apparatus for physically exercising parts of the body, said apparatus comprising an elongate component and a support upon which the component is mounted for rotation in a vertical plane, the apparatus having means for mounting the support in position, the apparatus being designed to enable a user to rest a leg or foot on one end of the rotatable elongate component whilst holding the other end of the component and then to manually rotate the component in order to assist in raising the leg or foot which is resting upon the rotatable component.
2. An exercise apparatus according to Claim 1 wherein the overall length of the rotatable elongate component is telescopically adjustable.
3. An exercise apparatus according to Claim 1 or Claim 2 wherein the support comprises a tube and the mounting means comprise a clamp connected thereto which enables the apparatus to be clamped onto an item of gymnasium equipment.
4. An exercise apparatus according to Claim 1 or Claim 2 wherein the support comprises a tube and the mounting means comprise a further tube to which the support tube is telescopically connected, one end of the further tube being designed to be received within a socket which holds the support tube and the further tube substantially vertically, the telescopic connection between the support tube and the further tube permitting adjustment of the height of the apparatus.
5. An exercise apparatus according to Claim 4 wherein the telescopic connection between the support tube and the

further tube automatically collapses if a force in excess of a predetermined limit is exerted on the support tube in an axial direction towards the further tube.

6. An exercise apparatus according to Claim 5 wherein the telescopic connection incorporates a wedge-sectioned ring which surrounds the smaller of the support tube and the further tube and a collar which also surrounds the smaller of the support tube and the further tube and which is provided with internal threading to engage corresponding external threading provided on the exterior of the larger of the support tube and the further tube, the arrangement being such that when the collar is tightened onto the threaded tube, at least part of the wedge-sectioned ring is forced into a clearance between the support tube and the further tube and will normally serve to hold the tubes in position relative to one another.

7. An exercise apparatus according to Claim 4, 5 or 6 wherein the apparatus includes a substantially planar platform or base having an upper surface upon which a socket is mounted, the socket being dimensioned snugly to receive the lower end of the further tube to which the support tube is telescopically connected, the user of the apparatus standing upon the platform when using the apparatus.

8. An exercise apparatus according to any one of the preceding Claims wherein the rotatable elongate component is capable of rotating through 360°.

9. An exercise apparatus according to any one of the preceding Claims wherein the rotatable elongate component is effectively supported in a cantilever fashion on one end of a component forming part of the apparatus.

10. An exercise apparatus substantially as herein described with reference to and as shown in the accompanying drawings.

11. Any novel feature or combination of features disclosed herein.

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Patents Act 1977
Examiner's report to the Comptroller under
Section 17 (The Search Report)

Application number

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Relevant Technical fields

(i) UK Cl (Edition L) A6M (MAK, MAX)

(ii) Int Cl (Edition 5) A63B 23/04

Search Examiner

A T BLUNT

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search

8 SEPTEMBER 1993

Documents considered relevant following a search in respect of claims

1-11

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 1503525 (OURGANT)	1
X	GB 609109 (EVANS)	1

Category	Identity of document and relevant passages -15-	Relevant to claim(s)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

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